EUROPEAN PATENT APPLICATION

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�54 Gaming apparatus.

㊐ A gaming machine has a display of 28 of an ordered
series of indicia, e.g. numbers or playing cards. A player
can press a chosen gamble button 30, 31 to select either
the indicia values of higher or of lower order than that
displayed. The machine then selects a new indicium at
random, e.g. by microprocessor 19 and displays the
new selected indicium. If this tallies with the player's
gamble selection a win is awarded.

The machine can be provided as a feature play of
a fruit machine with the gamble selection done on an
extra fruit machine reel 16.
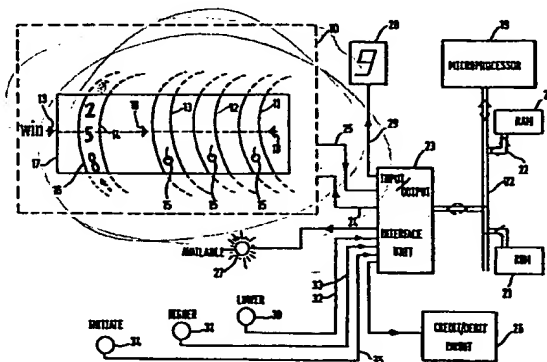
EP 0 050 419 A1

GAMING APPARATUS

The present invention concerns gaming apparatus.
The invention is a especially, though not exclusively,
5   concerned with an improvement to so-called fruit
machines. Fruit machines, also known as slot machines,
are well known. However, for the avoidance of doubt,
a fruit machine is hereby defined for the purpose of
this specification as an apparatus which in response to
10   a playing stake from a player automatically selects at
random and displays a group of two or more indicia from
a predetermined collection of indicia and provides a
win response if the selected and displayed group of
indicia corresponds to a predetermined winning combination
15   of the indicia. The win response is usually a pre-
determined value credit to the player and there may be
a number of different winning combinations providing
wins of different value. It is also known and common
for a win response to provide a player with the option
20   of operating various so-called play features to gamble

on or improve the basic win. In most fruit machines,
the indicia are provided as markings around the outer
edges of three or more rotatable reels, typically
having a common axis of rotation. The reels are rotated

5   and stopped at randomly selected angular positions. At
the periphery of each reel is a window exposing at least
one indicium of each reel, and the exposed indicia when
the reels stop constitute the selected group which may
or may not be a winning combination. The windows are

10   usually in a line parallel to the common axis of the reels
and they may expose up to three adjacent indicia on each
reel with a so-called win line defined   at the windows
identifying the group of indicia which may be a winning
combination.

15   A number of   so-called play features are well
known. For example, there is the HOLD feature whereby one
or more of the reels may be prevented from rotating, to hold
the previously selected indicia, during a subsequent
playing cycle of the machine. In another example, following

20   a ; win, the player is offered the chance of gambling the
win, double or quits. Another popular feature is the so-
called Nudge feature described in British patent No.

     The gaming apparatus of the present invention can
conveniently be used as a play feature in a fruit machine.

25   However, the gaming apparatus may also form a separate game

independent of a fruit machine, or may form part of a different game.

According to the present invention, there is provided gaming apparatus having indicia display means to display

5 to a player of the apparatus a selected one of an ordered series of indicia defined by the apparatus, gamble control means operable by the player to select either all the indicia of higher order or all those of lower order in the series relative to the displayed indicium, random selection

10 means operable to make a fresh selection at random of one of the series of indicia, and win means to produce a predetermined win response if the fresh randomly selected indicium is one of the indicia selected by the player. The ordered series of indicia in the above apparatus may comprise any series of indicia which fall in a generally known ordered series.

15 For example, the indicia may be letters of the alphabet where A is the beginning of the series and Z is the end of the series. Alternatively, the indicia may be a series of numbers, or they may be values of playing cards. The

20 gaming apparatus operates by permitting the player to guess whether the indicium to be selected at random will be of higher value or lower value in the ordered series than the indicium on display. If the player guesses correctly, then the apparatus provides a win response.

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It is normally desirable that means are provided to
display the fresh randomly selected indicium after
said gamble selection.

The display means may be arranged to display the
fresh randomly selected indicium as said selected one of
the indicia for a further gamble selection by the player.
Then, following an initial gamble by the player and random
selection by the apparatus, the player may be offered a
further chance to gamble starting from the freshly selected
indicium.

Typically, said win response of the apparatus is a
standard value credit to the player. However, any other
win response may also be employed which provides an
attraction to the player.

The win means may also produce a predetermined lose
response if the fresh randomly selected indicium is one of
the indicia not selected by the player, i.e. if the player
guesses wrongly. The lose response may be a standard
value debit to the player.

Normally, the apparatus includes an initiate control
operable by the player to initiate operation of said random
selection means. However, the apparatus may alternatively
respond automatically to actuation by the player of said
gamble selection means to initiate operation of said
random selection means.

player initiation

In one example, the random selection means includes

a window in the apparatus, a rotatable reel behind the

window having the indicia marked about an annular or

circumferential surface of the reel whereby one of the

indicia markings on the reel can be viewed through the

5   window as the selected indicium depending on the angular

position of the reel, means to rotate the reel and means

to stop rotation of the reel at a randomly selected

angular position to make said random selection of the

indicium viewed through the window. It can be seen that

10   such a preferred embodiment lends itself to incorporation

in a fruit machine of the usual kind.

Accordingly, the present invention also envisages a

fruit machine as hereinbefore defined incorporating the

above-described gaming apparatus and having means activating

15   the gaming apparatus to make the apparatus available for

play by the player of the fruit machine as a play feature

following a normal play sequence of the fruit machine.

Conveniently, said activating means is arranged to activate

the apparatus only following a winning play sequence of

20   the fruit machine. Then, if the player obtains a winning

combination on the fruit machine in a normal play sequence,

the player may be offered the chance of operating the

gaming apparatus to increase the value of his win.

Typically, said activating means is arranged to

25   activate the apparatus at random in response to a proportion

of winning play sequences of the fruit machine. The
activating means may maintain the apparatus activated
for repeated further gamble selections by the player until
the fresh randomly selected indicium is one of the indicia
not selected by the player. In this way, the player can
repeatedly increment his win until he makes a wrong guess.

An example of the present invention is now described
with reference to the enclosed drawing which shows
schematically a fruit machine incorporating gaming apparatus
embodying the present invention.

A typical fruit machine or slot machine has a reel
assembly containing the usual rotatable reels of the machine
having the fruit symbols or indicia marked on the outer
edges of the reels. The reel assembly usually comprises
the mounting arrangements for the reels, the drive
arrangement to rotate the reels together with arrangements
to stop the reels as desired and usually subject to control
signals from control apparatus in the machine. The reel
assembly also usually contains detector means for detecting
the angular positions of the reels so that at least the
positions of the reels after they are stopped can be
detected or determined, so that the symbols on the win
line of the fruit machine can be known to determine
whether they are a winning combination. In some arrange-
ments the reels are rotated by an electric motor, for

example, a stepping motor, and are stopped and started

by stopping and starting the motor appropriately. In

other arrangements, the reels are spun and stopped by

solenoid and ratchet arrangements.

5   In the example of the present invention illustrated

in the figure, a reel assembly for a fruit machine is

indicated generally at 10. The details of the reel

assembly 10 are not shown in the figure. The reel

assembly may comprise essentially any of the known types

10   of reel assembly already employed in the fruit machine

art.

The reel assembly 10 has four rotatable reels 11 to

14. Reels 11 to 13 constitute the usual fruit machine

reels having the usual fruit symbols marked on their outer

15   edges as at 15. The fourth reel 14 constitutes a

feature reel of the fruit machine enabling a play feature

to be played on the machine in accordance with this

embodiment of the invention. The reel 14 has indicia

marked about its outer edge as at 16. The indicia 16

20   are all members of an ordered series of indicia such

that a player of the machine can immediately recognise

whether one indicium of the series is of a higher or

lower order than another indicium in the series. In

the illustrated example, the indicia are simply numbers.

25   It is not essential for the numbers 16 to be arranged

about the reel 14 in numerical order, nor is it essential

that each number is different from every other number on the

reel 14. It is only necessary that there are several

different numbers located about the periphery of the reel 14.

5   It is however preferable that the numbers 16 on the reel

form a continuous series without any gaps, for example, all

the numbers from 1 to 13, and also that each number appears

on the reel 14 an equal number of times. This ensures that

with random stopping of the reel 14, the number 16 appearing

10   behind the win line of the machine as will be explained

later is randomly selected from the series.

Instead of numbers 16 the indicia on the reel 14 could

be letters of the alphabet or playing card values.

The reel assembly 10 is located in the fruit machine

15   behind a window 17 in a front panel of the machine so that,

in the usual way, at least one indicium of each of the reels

can be seen through the window when the reels stop.

Commonly, the window 17 is made sufficiently big so that three

or more adjacent indicia from each reel can be viewed through

20   the window, in which case a win line 18 is marked on or

adjacent the window to identify the indicia on the stopped

reels which are to be considered for a winning combination.

In the present example, the win line 18 also identifies the

number 16 on the reel 14 which is randomly selected by

25   operation of the machine as will be explained.

The normal game sequence of the fruit machine in the present example can operate in any known way in the art. The overall control of operation of the fruit machine in the illustrated example is maintained by a micropressor

5   system comprising a micropressor 19 connected in data communication with a random access memory RAM 20 and a read only memory ROM 21 by means of data buses 22. Data input to the microprocessor system, for example, from switches operated by a player of the machine, is controlled via an

10   input/output interface unit 23 also connected to the data bus 22. The interconnection and design of the microprocessor system comprising the microprocessor 19 RAM 20 ROM 21 and interface unit 23 is simply a matter of design fully within the capability of the experienced engineer working in this

15   field and forms no part of the present invention. Further- more, the detailed programming of the microprocessor system is also a matter for the experienced design engineer and programmer. In a typical standard game cycle of a fruit machine, the microprocessor responds to input signals ind-

20   icating a player has inserted sufficient coins or tokens into the machine to have credit for a game to enable an initiate button. When the player presses the initiate button on the fruit machine, the microprocessor responds by sending signals via the interface unit 23 to the reel

25   assembly 10 along a line 24 to initiate spinning of at

least the reels 11 to 13 of the machine. The reels 11 to
13 may be stopped by autonomous action of the reel assembly
10 but, more typically, they are stopped also by specific
control from the microprocessor. Once the reels 11 to 13

5   are stopped, the angular positions of the stopped reels are
determined and data defining the stop positions supplied to
the microprocessor via the interface unit 23 along a line 25.
The microprocessor 19 then identifies the symbols on the
reels 11 to 13 appearing at the win line 18, typically by

10   reference to data in the ROM 21, and further determines
whether these symbols constitute a winning combination again
by reference to data in the ROM 21. If a win is indicated,
the microprocessor provides signals again via the interface
unit to operate an appropriate credit or pay-out to the

15   player by a pay-out unit 26.

In the present example embodying this invention,
following a win combination of the stopped reels 11 to 13
as determined by the microprocessor 19, the microprocessor
19 then enables a feature play before initiating the pay-

20   out. This may be indicated to the player of the machine by
a flashing light 27 on the front panel of the machine
controlled by the microprocessor via the interface unit 23.
At the same time, the microprocessor 19 selects one of the
numbers 16 of the reel 14 and displays this number on a

25   display 28 which is controlled by data on a line 29 from

the interface unit 23. Then, on inspecting the number
displayed by the display 28, the player decides whether to
gamble that a future random selection will produce a number
from the series on the reel 14 either higher or lower than
5   that displayed on the display 28. The fruit machine will
normally have clearly visible instructions on its front
panel making it clear to the player the range of numbers
from which the selection will be made. For example, if
the range is from the numbers 1 to 13, and the number
10   displayed on the display 28 is number 9, then the player
might consider it most likely that a future random selection
would produce a number lower than number 9 from the series.
The player would indicate the selection by pressing a button
30 marked LOWER. If on the other hand the player considered
15   it more likely the selection would produce a higher number,
he would press a button 31 marked HIGHER. The player's
selection is supplied to the microprocessor 19 along lines
32 and 33 via the interface unit 23. Following selection by
pressing one of the buttons 30 and 31 the player initiates
20   the automatic random selection by the machine by pressing
an INITIATE button 34 which signals to the microprocessor
along a line 35 via the interface unit 23. The micro-
processor 19 responds by instructing the reel assembly 10,
along the line 24, to spin the reel 14 and subsequently
25   stop the reel at a randomly selected angular position.

The random selection of the machine is then indicated by
the number 16 of the reel 14 appearing behind the win line
18.

The position of the reel 14 after stopping is supplied

5   to the microprocessor 19 along the lines 25 and the micro-
processor 19 determines the number 16 on the win line 18
by comparison with data in ROM 21 and compares this number
with the number being displayed on the display 28. If the
comparison agrees with the HIGHER/LOWER selection by the

10   player, then the microprocessor 19 provides a win response
by instructing the credit/debit pay-out unit 26, via the
interface unit 23 to credit the player with a standard value.

In the present example, the microprocessor 19 is
programmed also to maintain the availability of the play

15   feature following a winning selection by a player so that
the player can subsequently gamble again. Then, the
microprocessor 19 automatically changes the number displayed
on the display 28 so as to correspond with the randomly
selected number from the reel 14 on the win line 18.

20   Thus, the number in the display 28 is changed automatically
following a correct or winning selection by the player.
However, if the player makes a losing selection, the
microprocessor 19 responds by discontinuing the availability
of the play feature. The original value on the display 28

25   is then left to enable the player to compare it visually

with the random selection on the reel 14.

There are various modifications of the game feature
embodying this invention. It may be preferred to provide
the feature as a "no lose" feature so that when the feature
5   is offered, the player receives a standard credit following
each correct selection, but following a wrong selection, the
feature is simply discontinued and the player has the option
of proceeding with a further normal play sequence of the
fruit machine. In this arrangement, it will normally be
10   desirable to provide a maximum number of repeated feature
plays following successive correct selections by a player
to limit the maximum credit available on a particular
sequence. For example, a player may be able to make correct
selections up to a maximum of ten successive times after
15   which the microprocessor 19 automatically discontinues
availability of the feature so that the game proceeds to a
normal cycle.

In another arrangement, the microprocessor may arrange
to provide a debit of a standard value against a player
20   following a wrong selection by the player.

Furthermore, it may be desirable to limit the number
of times upon which the feature is made available following
a winning combination of the normal fruit machine play
cycle. Thus, the play feature embodying the present invention
25   is made available only at random following a proportion of

Winning combinations.

The example of this invention described with reference to the accompanying drawing includes a microprocessor system. However, it should be apparent that other ways of engineering

5   the present invention are possible and within the ability of the design engineer. For example, the microprocessor system may be replaced by an electro-mechanical or electronic logic system designed specifically for the purpose intended.

In playing the game feature described above, it will

10   be apparent that it is possible the randomly selected number from the reel 14 may be equal to the number in the display 28. The way in which the microprocessor 19 is arranged to respond to this situation is for the designer to decide. The microprocessor may treat such an identical selection as

15   either a win or as a lose. In the "no lose" example described above, it may be preferable to programme the microprocessor 19 to respond to an identical selection by discontinuing availability of the feature. However, in other arrangements, the microprocessor may be programmed to

20   respond to an identical selection with a bonus win, perhaps at the same time discontinuing further availability.

The example of the present invention illustrated in the drawing, employs a reel assembly 10 with rotatable reels as common in fruit machines. However, other techniques of

25   making a random selection of the indicia of the ordered

series may be used. For example, the fruit machine may have a television-type screen on which the normal fruit symbols are displayed subject to the control of electronic circuitry. Then, the random selection may take place

5 purely in the circuitry of the machine with the selected indicium being displayed on the screen.

Furthermore, although in the present example, an embodiment of the invention has been described as a play feature of a normal fruit machine, it will be appreciated

10 that other embodiments of the present invention are possible quite independent from fruit machines. The principles of the game apparatus of the present invention can be embodied separately in appropriate apparatus or as additional features in different game machines.

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CLAIMS:

1.   Gaming apparatus having indicia display means
to display to a player of the apparatus a selected one of
an ordered series of indicia defined by the apparatus,
gamble control means operable by the player to select either
all the indicia of higher order or all those of lower order
in the series relative to the displayed indicium, random
selection means operable to make a fresh selection at
random of one of the series of indicia, and win means to produce a pre-
determined win response if the fresh randomly selected
indicium is one of the indicia selected by the player.

2.   Gaming apparatus as claimed in claim 1 wherein
means are provided to display the fresh randomly selected
indicium after said gamble selection.

3.   Gaming apparatus as claimed in claim 1 or
claim 2 wherein said display means is arranged to display
the fresh randomly selected indicium as said selected one
of the indicia for a further gamble selection by the
player.

4.   Gaming apparatus as claimed in any preceding

claim wherein said win response is a standard value credit
to the player.

5. Gaming apparatus as claimed in any preceding
5 claim wherein said win means produces a predetermined lose
response if the fresh randomly selected indicium is one
of the indicia not selected by the player.

6. Gaming apparatus as claimed in claim 5 wherein
10 said lose response is a standard value debit to the player.

7. Gaming apparatus as claimed in any preceding
claim and including an initiate control operable by the
player to initiate operation of said random selection means.
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8. Gaming apparatus as claimed in any preceding
claim wherein said random selection means includes a window
in the apparatus, a rotatable reel behind the window having
the indicia marked about an annular or circumferential
20 surface of the reel whereby one of the indicia markings on
the reel can be viewed through the window as the selected
indicium depending on the angular position of the reel,
means to stop rotation of the reel at a randomly selected
angular position to make said random selection of the
25 indicium viewed through the window.

9.   A fruit machine, as hereinbefore defined
incorporating a gaming apparatus as claimed in any
preceding claim and having means activating the gaming
apparatus to make the apparatus available for play by
5   the player of the fruit machine as a play feature following
a normal play sequence of the fruit machine.

10.   A fruit machine as claimed in claim 9 wherein
said activating means activates the apparatus only following
10   a winning play sequence of the fruit machine.

11.   A fruit machine as claimed in claim 10 wherein
said activating means is arranged to activate the apparatus
at random in response to a proportion of winning play
15   sequences of the fruit machine.

12.   A fruit machine as claimed in any of claims
9 to 11, as dependent from claim 3, wherein said activating
means maintains the apparatus activated for repeated
20   further gamble selections by the player until the fresh
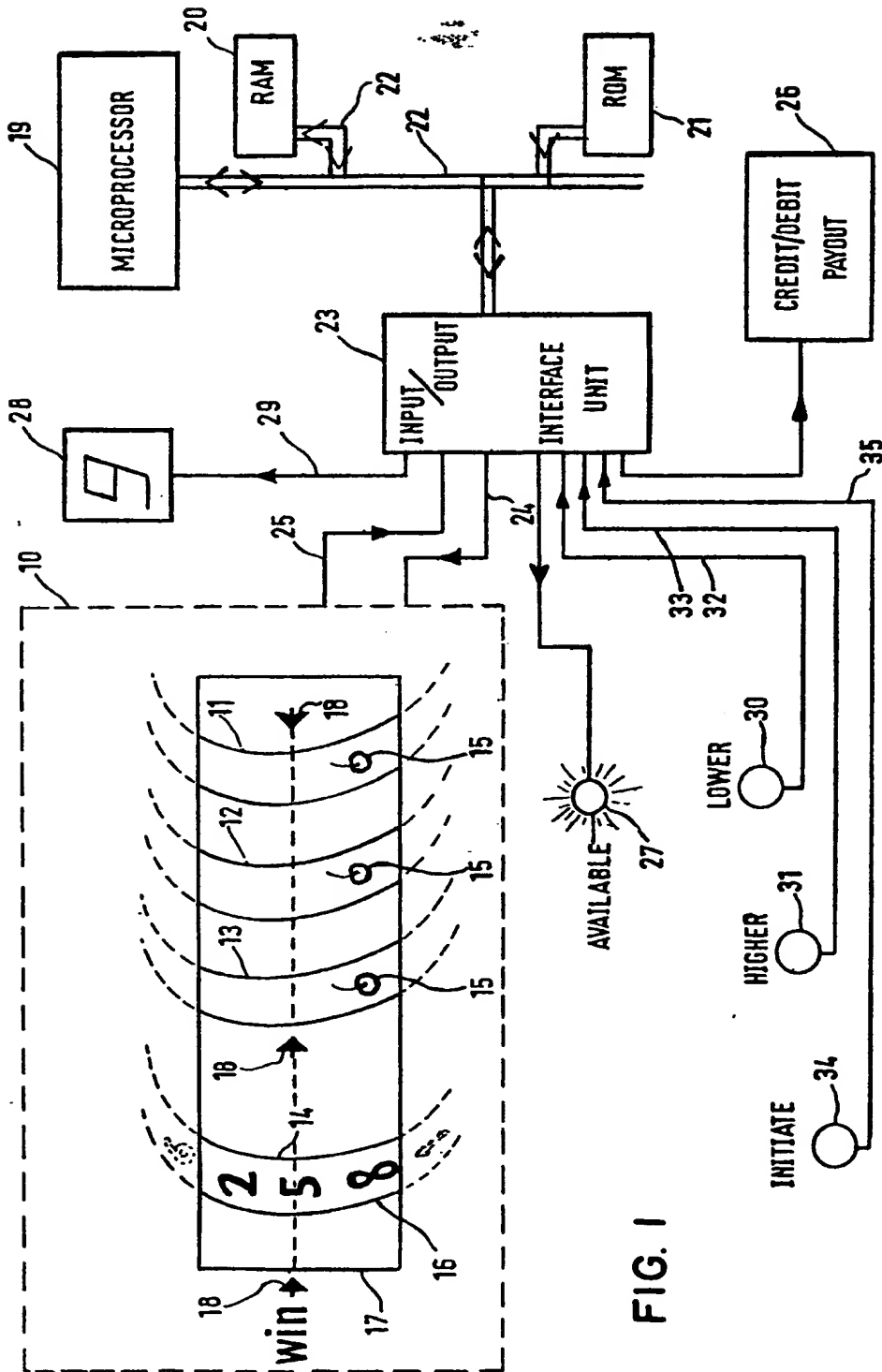randomly selected indicium is one of the indicia not
selected by the player.

FIG. I

DOCUMENTS CONSIDERED T BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim
Y	GB - A - 1 242 298 (PHONOGRAPHIC TECHNICAL Ltd.) * Claims and figures *	1,4-7, 9,10

Y	GB - A - 1 553 117 (GLENDEARG RESEARCH Ltd.) * Claims and figures *	1,7

A	GB - A - 1 275 697 (C.L. ELDER) * Claims and figures 1-3 *	1,7

A	DE - A - 2 911 643 (P. GAUSELMANN) * Claims; figure and page 8, paragraph 3 to page 12, last paragraph. *	1,4, 7-11

A	DE - A - 2 054 289 (R. SENN) * Claims; figure 1 *	1,4,8, 9

A	GB - A - 1 568 522 (M.G. WHITE) * Claims; figure 1 *	1

CLASSIFICATION OF THE APPLICATION (Int. Cl. 3)

G 07 F 17/34

TECHNICAL FIELDS SEARCHED (Int.Cl. 3)

G 07 F 17/32
        17/34
G 06 F 15/44

CATEGORY OF CITED DOCUMENTS

X: particularly relevant if taken alone
Y: particularly relevant if combined with another document of the same category
A: technological background
O: non-written disclosure
P: intermediate document
T: theory or principle underlying the invention
E: earlier patent document, but published on, or after the filing date
D: document cited in the application
L: document cited for other reasons

&: member of the same patent family, corresponding document

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	26-01-1982	DAVID

EPO Form 1503.1 06.78